

Eggs pale yellowish, covered somewhat with the waxy secretion but only accidentally; deposited on the lower stems just beneath the surface of the ground.

We have been taking this louse for the past three seasons about Fort Collins and always on *Symphoricarpos* at or below the surface of the ground throughout the year. It seems to be a bark feeder exclusively. While this louse may not properly belong in the genus *Aphis*, it fits here as well as in any genus known to me.

Plate 9, Figs. 1 to 9, *Aphis pulverulens*; Figs. 10 to 16 *Rhopalosiphum capreæ*. 1, Alate; 2, apterous viviparous females; 3, male; 4, antenna of Fig. 2; 5, antenna of Fig. 1; 6, antenna of male; 7, antenna of oviparous female; 8, hind tibia of oviparous female; 9, cornicle of alate female; 10, alate viviparous female; 11, end of abdomen showing tubercle of the preceding; 12, the large tubercle or spine of the apterous female; 13, apterous female; 14 and 15, cornicles of alate and apterous females; 16, antenna of alate female.

Figs. 1, 2 and 3 are enlarged 14 diameters; 4 to 9 enlarged 60 diameters; 10 and 13, 20 diameters; 11 and 12, 40 diameters; 14, 15 and 16, 80 diameters. Original, Miss M. A. Palmer, Delineator.

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## LIST OF THE APHIDIDÆ OF ILLINOIS, WITH NOTES ON SOME OF THE SPECIES.

(Concluded from p. 496, Vol. 3.)

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\**Phorodon scrophulariæ* Thos.: 8th Rep. State Ent. Ill. (1880), p. 72. I have never seen this species, and it has only been recorded once since the original description, W. T. Clarke having reported collecting it in California on *Scrophularia* sp.<sup>1</sup> First reported by Thomas.

\**Phorodon galeopsidis* Kalt.: What I consider this species and have described below was found quite common on *Polygonum pennsylvanicum* at Oak Park and Urbana from July to October. It doubtless occurs at other seasons on the same plant, but it has never been looked for other than in the months mentioned. It has not heretofore been recorded from America, although I surmise that the species referred to as *Siphonophora polygoni* by Thomas and Oestlund are this species. It colonizes on the under surface of the leaves, principally along the larger leaf veins. The oviparous female was not taken.

*Winged viviparous female*.—Head dusky (Pl. 10, fig. 3), thoracic plate dark olive, abdomen yellowish to yellowish green with a dark dusky green rectangular spot on the dorsum, which sometimes is only present on the two segments anterior to the cornicles, and a row of very faint dusky spots on each side of the abdomen.

<sup>1</sup>A list of California Aphididæ. Can. Ent. Vol. XXXV (1903), p. 252.

Antenna dusky to blackish, the two basal segments also dusky, but paler than the others; VI filament longest, it being about twice the length of the next longest segment (segment III), IV fully a third shorter than III, IV and V subequal, VI base about 2-5 the length of V or 1-8 the length of VI filament, total lengths about 1 1-2 times that of the body; III with 23-33 (usually 27 or 28) small but conspicuous, circular, irregularly placed sensoria, IV with 13-18, V with 1-4, usually in a row and the usual larger one at distal end, VI base with a large one surrounded by a number of minute ones at distal end. (Pl. 10, fig. 2.) Eyes red. Beak not reaching to coxae of the second pair of legs. Wings with veins dark brown and distinct, third discoidal branching slightly nearer to the apex than to where the second branches. (Pl. 10, fig. 1.) Legs pale yellowish, excepting the joints, which are brownish, and the tarsi, which are black. Cornicles reaching beyond tip of abdomen, very slender, the basal two-thirds swollen, the distal third pale yellowish to greenish yellow and dusky at tips. (Pl. 10, fig. 4.) Style moderately long and slender, about a third the length of cornicles. (Pl. 10, fig. 5.)

*Measurements*.—Length of body, 1.8 mm.; width, 0.72 mm.; length of forewing, 3.0 mm.; width 1.25 mm.; antenna, I, 0.10; II, 0.065; III, 0.38-0.44, avg. 0.42; IV, 0.27-0.36, avg. 0.33; V, 0.245-0.31, avg. 0.28; VI, base, 0.09; VI, filament, 0.82-0.93, avg. 0.86; avg. total, 2.145 mm.; cornicles, avg. 0.42 mm.; style, avg. 0.145 mm.; hind tarsus, avg. 0.11 mm.

*Wingless viviparous female*.—Entire body pale yellow. Head and first antennal segment bearing several whitish capitate hairs. Antennae whitish, about as long as body, relative lengths of segments as in winged viviparous female. Eyes dark red. Beak not reaching beyond coxae of second pair of legs. Legs whitish. Cornicles and style whitish, otherwise as in winged.

*Measurements*.—Average, in mm. Length of body, 2.3; width, 1.07; antenna, I, 0.095; II, 0.06; III, 0.45; IV, 0.35; V, 0.29; VI, base, 0.085; VI, filament, 0.85; cornicles, 0.67; style, 0.19.

*Winged male*.—In relative measurements similar to the winged viviparous, differing from it as follows: head and thorax blackish, abdomen pale yellowish, with a slight faint orange tint, the longitudinal median dorsal red line which is so conspicuous in the pupal stage is faintly visible, and on each side of the median, extending longitudinally, are short dusky transverse markings, one or two of which are sometimes connected at the median line, thus forming single transverse bars on the respective abdominal segments. Entire body covered with a fine pulverulence. Antennae black, and with circular sensoria irregularly placed as follows: III, 33-39; IV, 20-31; V, 8-13. Femur dusky to blackish, being paler at the base, tibia pale excepting black distal end, and tarsus black. Cornicles and style dusky and a black spot at the base of each cornicle.

The conspicuously marked immature male is at once distinguished from the pale yellowish young of the viviparous generations. It is characterized by a bright reddish longitudinal median dorsal line on a pale yellowish background, and extends the entire length of the body. In the adult pupa the line is not such a bright red, and the abdomen is more of a pale orange color.

\**Macrosiphum asclepiadis* Cowen: Bull. Col. Agr. Expt. Station No. 31, Tech. Ser. No. 1, (1895), p. 123. A rather common species in Illinois, on *Asclepias* sp. This may have been one of the species

which Thomas seems to have confused in his description of *Siphonophora asclepiadis* Fitch.<sup>1</sup>

<sup>a</sup>*M. calendulæ* Monl.: Bull. Geol. and Geog. Surv. Vol. V, No. 1 (1879), p. 21. Mr. Monell (*loc. cit.*) determined specimens collected in Illinois as questionably this species. I am unacquainted with it.

*M. cerealis* Kalt.: Pergande, Bull. Div. Ent. U. S. Dept. Agr. No. 44 (1904), p. 18. I have been unable to separate this species from *granaria*, and although I believe the two synonymous, leave them distinct for the present. First reported by Pergande.

*M. circumflexum* Buck. (= ? *Myzus vinæ* Gil.): Buckton, Monograph of British Aphides, Vol. I (1876), p. 130, col. figs.; Gillette, Can. Ent. Vol. XL (1908), p. 19, figs. What I consider this species is found in greenhouses in Illinois, and is often destructively abundant on dahlia, easter lily, *Vinca*, and maiden-hair fern (*Adiantum*). First reported by the writer.

\**M. cratægi* Monl.: Bull. U. S. Geol. and Geog. Surv. Vol. V (1879), p. 20. I found this species common on the under surface of the leaves of *Cratægus* in the Chicago parks. It was not, however, sufficiently common to be injurious. I believe this species has not been reported since the original description by Monell. Prof. W. T. Clarke, in his "*List of California Aphididæ*"<sup>2</sup> lists *Aphis cratægi* Monl. from California. He doubtless had another species as Monell's *cratægi* is a true *Macrosiphum*. The antenna of the wingless viviparous female is shown in Pl. 10, fig. 6.

<sup>t</sup>*M. curcubitæ* Thos.: 8th Rep. State Ent. Ill. (1880), p. 67. Very common and sometimes destructive to squash vines. Usually, however, they do not become injuriously abundant until in the fall when the plants are fully matured, and fruit nearly ripe. First reported by Thomas.

*M. cynosbati* Oestl.: Davis, Annals, Ent. Soc. America, Vol. II (1909), p. 38, figs. Colonizes on tender terminal twigs and leaves of the common ornamental currant (*Ribes aureum*), often seriously stunting the growth. First reported by the writer.

<sup>t</sup>*M. erigeronensis* Thos.: Sanborn, Kans. Univ. Sci. Bull. Vol. III (1904), p. 76, figs. Common on *Erigeron canadense* throughout the state. First reported by Thomas.

<sup>d</sup>*M. fragariæ* Koch. var. *immaculata* Riley: Rural World, December 11, 1875. This variety was described by Doctor Riley in the Rural World, characterizing it as different from *fragariæ* Koch by the absence of black lateral abdominal spots in the winged female, and in

<sup>1</sup> 8th Rept. State Ent. Illinois, 1880, p. 58.

<sup>2</sup> Can. Ent. Vol. XXXV (1903), p. 250.

the head of the wingless being yellow.<sup>1</sup> Nothing has since been added to our knowledge of the species, though it has been mentioned in literature by several authors, excepting the notes made by Monell<sup>2</sup> from an examination of a single winged specimen in Riley's cabinet,

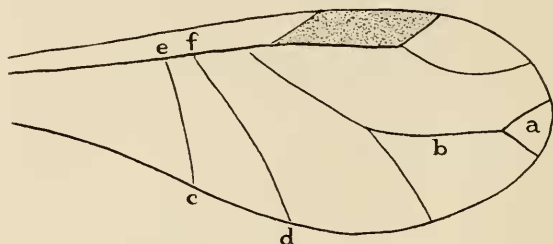


Fig. 10. Sketch of wing of *M. fragariae* var. *immaculata* Riley [After Monell].

and by Mr. Theo. Pergande<sup>3</sup> who, after examining the few poorly preserved specimens (probably pinned) of Riley's *immaculata*, states that his *Macrosiphum trifolii* is distinct. Nor has it been identified since the original description, and it is probable that the species referred to by Riley as *immaculata* is some other—possibly *A. forbesi*. Mr. Monell has very kindly placed at my disposal the original notes which he made August 21, 1876, from a specimen in Riley's collection. They are as follows:

"62°. Cell formed by secondary branches of cubital very small (a). The upper branch in *S. fragariae* Koch (see pl. XXXII Pflanzenlause) being quite equal in length to part marked *b* in explanatory sketch. The first and second discoidal are almost parallel in Koch's figure [while in *immaculata*] space at apices [*c d*] is little over twice as wide as space at bases [*e f*]. Hind wings have apex more pointed than in Koch's figures. It has two discoidals, costal vein seems rather straight. Little (hooks) protuberances upon costal edge (Koch's figure does not show costal edge). Drawn from dried specimen in Mr. Riley's cabinet under small lens August 21, 1876."

The drawing referred to by Mr. Monell is only 13 mm. in length, and I have drawn free-hand (fig. 10) a reproduction which, for the purpose here intended, is sufficiently accurate. The venation agrees quite well with *Aphis forbesi* Weed,<sup>4</sup> but differs from that species in lacking the black lateral abdominal spots. Although these notes are insufficient to draw any reliable conclusion, they are given with the hope that they may later be a help in a solution of the problem. This species has never been positively reported from Illinois.

<sup>1</sup>*M. gerardiae* Thos.: 8th Rep. State Ent. Ill. (1880), p. 66. This species has not been reported since the original description.

<sup>2</sup>Mr. J. T. Monell, in a letter dated December 7, 1910, writes: "There is no formal description, but simply what Thomas gives in his Illinois report. I may note that Riley did not at that date know a *Siphonophora* from an *Aphis*."

<sup>3</sup>Bull. U. S. Geol. and Geog. Surv., Vol. V (1879), p. 22.

<sup>4</sup>Bull. U. S. Depart. Agr., Div. Ent., No. 44 (1909), p. 22.

<sup>5</sup>The venation of *forbesi*, however, varies considerably.



*M. granaria* Buck.: Pergande, Bull. Div. Ent., U. S. Dept. Agr. No. 44 (1904), p. 14, figs. The most common and generally distributed grain louse in Illinois, but seldom injurious. First reported by Pergande.

*M. lactuæ* Schr.: Thomas, 8th Rep. State Ent. Ill. (1880), p. 60. What is doubtfully referred to this species is common on cultivated lettuce in greenhouses, where it often is a nuisance of considerable importance. We have also taken it on celery out-of-doors.

*Winged viviparous female*.—Head (Pl. 10, fig. 7) and thoracic shield jet black. Abdomen pale green with blackish markings as shown in figure (Pl. 10, fig. 8). These markings vary considerably in size, but the figure is typical. Eyes dark red to blackish. Antennæ black; more than a third longer than the body; segment VI filament longest, it being more than twice the length of III, IV and V subequal and each about two thirds the length of III, VI base about one fourth length of IV or one twelfth of the filament; segment III with 40 to 50 irregularly placed circular sensoria; segment IV with 7 to 11 in a row; V with the usual one at distal end, and VI base with the usual distal one surrounded by several smaller ones (Pl. 10, fig. 9). (In two examples, both from same individual, segment III had but 27 and 28 sensoria, and IV but 2 and 3, respectively.) Beak reaching coxæ of second pair of legs, the tip black. Wings with brownish venation (Pl. 10, fig. 10). Cornicles black, reaching to or slightly beyond tip of abdomen. Style dusky or brownish to blackish, about half the length of cornicles.

*Pupa*.—Entirely pale green. Eyes black. Antennæ with segments I, II, and basal portion of III concolorous with body, remaining segments darkening to brown, the last segment black. Legs with femur pale greenish, tibia pale brownish, and tarsus black. Cornicles dusky. Style green.

*Wingless viviparous female*.—Head and body green, varying from pale to dark. Antennæ a little longer than body; segment VI filament longest, it being from a third to a half longer than III, IV and V subequal, IV, however, invariably slightly the longer, VI base short, it being only about one ninth or one tenth the length of filament; segment III with 24 to 30 irregularly placed circular sensoria which are much more thickly placed on the basal two thirds of the segment; pale green with the joints, distal end of V, and VI blackish. (Pl. 10, fig. 11.) Cornicles cylindrical, concolorous with body, the tip being blackish, reaching to tip of body, twice the length of style and about four fifths the length of antennal segment III. Style concolorous with abdomen.

*M. liriodendri* Monl. and var. *rufa* Monl.: Davis, Annals, Ent. Soc. Amer. Vol. II (1909), p. 36, figs. I have found this species at Urbana, Galesburg and other central Illinois cities, where it is common on the *Liriodendron tulipifera*. First reported by the writer.

*M. minor* Forbes: 13th Rep. State Ent. Ill. (1884), p. 101. First reported by Forbes.

*M. rosæ* Linn: Thomas, 8th Rep. State Ent. Ill. (1880), p. 50; Oestlund, Bull. Geol. and Nat. Hist. Surv. Minn. No. 4 (1887), p. 81. A common and annoying pest of garden roses. First (doubtfully) reported by Thomas.

*M. rubi* Kalt.: Thomas, 8th Rep. State Ent. Ill. (1880), p. 64. Supposedly Thomas's observations were made in Illinois, although he does not so state. The species has not since been reported, and is questionable if it occurs in the United States.

*M. rudbeckiæ* Fitch: Thomas, 8th Rep. State Ent. Ill. (1880),

p. 49; Weed, *Psyche* Vol. 5 (1889), p. 127. A very common species in Illinois, it being especially noticeable on cultivated lettuce, *Lactuca scariola*, cultivated garden aster, *Aster drummondii*, and *Ambrosia trifida*. First reported by Thomas.

*M. sanborni* Gil.: Can. Ent. Vol. XXXX (1908), p. 65, figs.; Sanborn, Kans. Univ. Sci. Bull. (1904), p. 73, figs. (*M. chrysanthemi*.) One of the most common and destructive pests of chrysanthemum, both in greenhouses and out-of-doors. First reported by the writer.

\**M. solanifolii* Ashm.: Patch, Bull. Me. Agr. Exp. Sta. No. 147 (1907), p. 251, figs. Although not commonly and generally a pest of the potato in Illinois, I have occasionally found it exceptionally and injuriously abundant.

<sup>d</sup>*M. tanacetii* Linn.: Although Thomas mentions this species in the Eighth Illinois report, there is no indication that he actually found it.

\**M. tiliæ* Mon.: Bull. U. S. Geol. and Geog. Surv. Vol. V (1879), p. 20. I have taken this rare species on two occasions on the under sides of linden leaves in the Chicago parks.

*M. trifolii* Perg.: Bull. Div. Ent. U. S. Dept. Agr. No. 44 (1904), p. 21, figs. First reported by Forbes.

*M. ulmariae* Schr. (*pisi* Kalt.): Sanderson, Can. Ent. Vol. 33 (1901), p. 31. Common in Illinois on red clover (*Trifolium pratense*), white sweet-clover (*Melilotus alba*), sweet peas and garden peas, it being especially destructive to the two last mentioned. First reported by Thomas.

<sup>t</sup>*M. verbenæ* Thos.: Bull. Ill. State Lab. Nat. Hist. Vol. I, art. 2, p. 8. This species has not been reported since the original collection. First reported by Thomas.

<sup>t</sup>*M. viticola* Thos.: 8th Rep. State Ent. Ill. (1880), p. 55. A common grape louse, often exceedingly abundant. First reported by Thomas. See discussion under *Aphis illinoiensis*.

#### ADDENDA.

\**Rhopalosiphum poæ* Gillette.—Can. Ent. Vol. XL. (1908). p. 61, Figs. 10. Wingless adults, immature and pupæ were found abundant on blue grass (*Poa pratensis*) at Aurora, Ill., November 14, 1910. Found in sheltered places, under conditions almost identical with those reported by Professor Gillette. (*loc. cit.*)

*Hyadaphis pastinacæ* Linn.—Since writing on this species (see page 493 of the JOURNAL, Vol. 3) Prof. O. W. Oestlund has kindly examined his *Siphocoryne archangelicæ* and in a letter of December 19, 1910, he says that it has the dorsal tubercles and is doubtless the same as *H. salicis* Monl. He further states, "What I take to be a

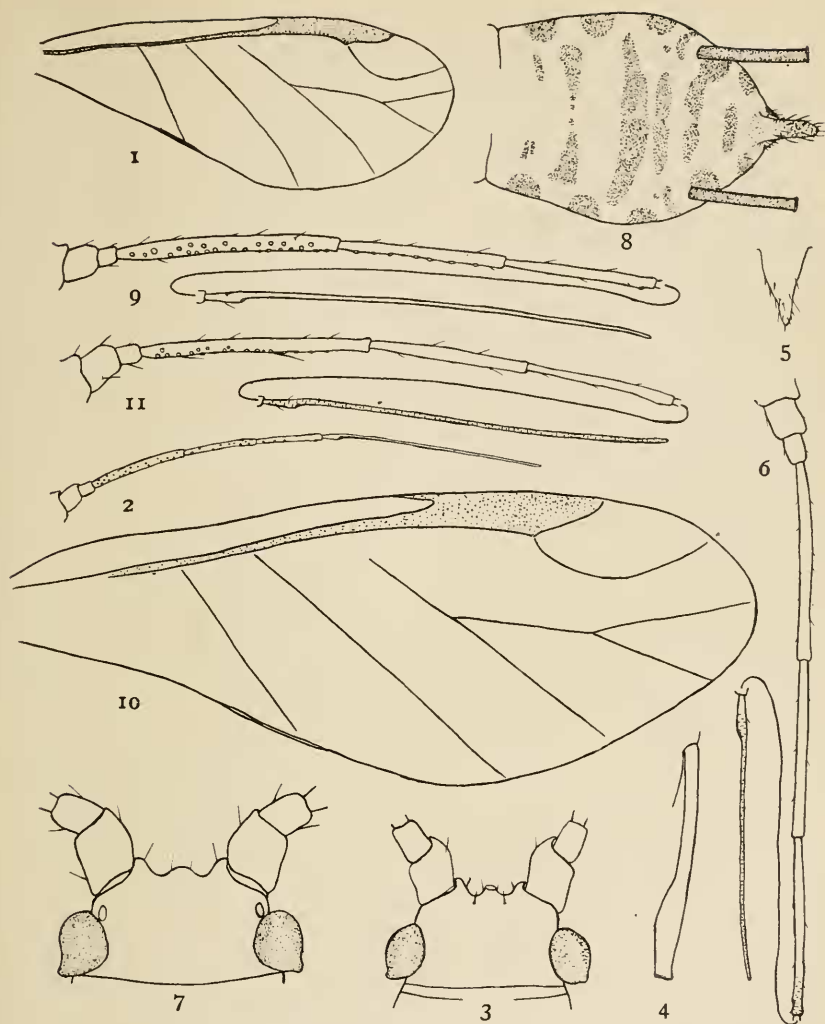


Plate 10. Aphid Structures

typical *S. pastinacæ*, that I collected at Vancouver some years ago, is so similar to our material that the three are no doubt the same.

#### EXPLANATION OF PLATE 10.

*Phorodon galeopsidis* Kalt.—Fig. 1, wing; 2, antenna; 3, head; 4, cornicle; 5, style of winged viviparous female.

*Macrosiphum cratagi* Monl.—Fig. 6, antenna of wingless viviparous female.

*Macrosiphum lactucæ* Schr.—Fig. 7, head; 8, abdomen; 9, antenna; 10, wing of winged viviparous female; 11, antenna of wingless viviparous female.

Camera lucida drawings, figures 3, 4, 5, and 7, with one-inch eye piece and two-third objective; 2, 8, and 10 with one-inch eye piece and one and a half inch objective; 6, 9, and 11 with a two-inch eye piece and two-third objective; 1 with a two-inch eye piece and one and a half inch objective.